



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Azmoodeh

Application No.: 09/973,608

Filed: 10/9/2001

For: SYSTEMS AND METHODS FOR
MINIMIZING HARMONIC
INTERFERENCE

Examiner: An Luu

Art Unit: 2816

REC'D

MAY 17 2004

OFFICE OF THE COMMISSIONER

RESPONSE

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

The Office Action rejected claims 1-9, 11-12 and 15-16 under Section 102(b) as anticipated by Chow (4,733,197). Claim 10 was rejected under Section 103(a) as obvious over Chow, while claims 13-14 were rejected under Section 103(a) as unpatentable over Chow and Canfield (USPN 6,310,922).

The Section 102 Rejection

Claims 1-9, 11-12 and 15-16 were rejected under Section 102(b) as anticipated by Chow. Chow relates to an acquisition circuit in an improved phase-locked loop that prevents cycle slipping by detecting and compensating an impending large phase difference between an independent incoming signal and a local comparison signal dependently related to a voltage controlled oscillator. A train of pulses is generated in progressively delayed phase relation with each cycle of the oscillator output signal.

Additionally a threshold signal related to the independent signal is produced. In response

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to overlap of the threshold signal and individual ones of the pulses, a phase error signal is generated which controls a commutator to select individual ones of the pulses having a predetermined delay as the comparison signal, thereby generating a correcting control signal to phaselock the oscillator at a faster rate than the linear response time of a standard loop.

Chow operates in a manner that is exactly opposite to the operation of the invention. As discussed in Chow' Summary of the Invention Section: "A principal objective of the present invention is to provide a phaselocked loop circuit that prevents true phase error from exceeding 2π radians thereby overcoming the problem of cycle slipping." Chow ensures that the clock is phase locked and tries to minimize jitter. For instance, Chow notes that:

When input to the counter 26, the signal 36 may include substantial phase jitter as a result of changes in environmental conditions over the distances that the signal 36 is called upon to traverse. Where phase jitter exceeds $\pm\pi$, the circuit 10 would tend to slip cycles whereas the circuit 30 provides non-slip operation by virtue of an acquisition circuit that includes the flip flop 31 together with delay means shown as a four stage ring counter 40 that is connected to an output 41 of the counter 27 for generating a series of signals 42 in progressively delayed phase relation with the divided down oscillator output signal 14. As shown in FIGS. 5d-5g, the signals 42 comprise a plurality of sequential signals A, B, C, D that occur in successively delayed phase relation with the divided down oscillator output signal 14. Chow at Col. 3, line 58 – Col. 4, line 5.

The Chow system minimizes jitter. In contrast, the operation of the instant invention PURPOSELY INTRODUCES phase jitter, which Chow regards as undesirable. Embodiments of the system in the application provide methods for suppressing adverse harmonic of the signal. Changing the duty cycle of the digital clock reduces or eliminates various specific unwanted harmonics that cause electrical interference. The system

reduces a specific signal interference problem on a chip and minimizes the effect of the harmonics of the clocks on a chip on other parts of the chip.

As recited in claim 11, the instant clock generator has a high frequency clock/oscillator; a counter coupled to the clock/oscillator; and a controller coupled to the down counter to change the duty cycle of the clock to eliminate or suppress the nth-order harmonic of the clock and to generate a low frequency clock with an asymmetrical duty cycle. Here, Chow fails to show the controller coupled to the down counter to change the duty cycle of the clock to eliminate or suppress the nth-order harmonic of the clock and to generate a low frequency clock with an asymmetrical duty cycle.

Since at least this element is missing, Chow cannot anticipate claim 11 and those dependent therefrom.

As to independent claim 6, Chow fails to show the means for changing the duty cycle of the clock to eliminate or suppress the nth-order harmonic of the clock. Chow also fails to show the means for generating a low-interference clock having the changed duty cycle while keeping the predetermined frequency. Each of these missing features is an independent basis for traversing the Section 102 rejection.

Independent claim 1 was also rejected under Section 102. Again, the Chow reference does not show at least changing the duty cycle of the clock to eliminate or suppress the nth-order harmonic of the clock; and generating a low-interference clock having the changed duty cycle while keeping the predetermined frequency.

Since a Section 102 rejection requires each and every element of the claim be present, and since Chow does not show any part of claim 1, 6, and 11 as well as those

dependent therefrom, the invention cannot be anticipated by Chow. Withdrawal of the Section 102 rejection is respectfully requested.

The Section 103 Rejection

Claim 10 was rejected under Section 103(a) as obvious over Chow, while claims 13-14 were rejected under Section 103(a) as unpatentable over Chow and Canfield (USPN 6,310,922).

With respect to claim 10, Chow address a different problem and operates in a manner that is exactly the opposite of the operation of the instant invention (namely to remove the phase jitter). The reference used to reject the claims teaches away from the claimed invention. This teaching away is a *per se* demonstration of lack of *prima facie* obviousness. The teaching away is the antithesis of the art suggesting that the person of ordinary skill go in the claimed direction. *In re Fine*, 873 F.2d 1021 (Fed. Cir. 1988).

Hence, claim 10 is allowable over the Chow reference. As to claims 13-14, they are allowable because they depend from allowable claim 11. Moreover, there is no basis in the art for combining the references in the manner proposed. Per MPEP Section 2143.01:

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir.

2000). See also *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In *In re Kotzab*, the claims were drawn to an injection molding method using a single temperature sensor to control a plurality of flow control valves. The primary reference disclosed a multizone device having multiple sensors, each of which controlled an associated flow control valve, and also taught that one system may be used to control a number of valves. The court found that there was insufficient evidence to show that one system was the same as one sensor. While the control of multiple valves by a single sensor rather than by multiple sensors was a "technologically simple concept," there was no finding "as to the specific understanding or principle within the knowledge of the skilled artisan" that would have provided the motivation to use a single sensor as the system to control more than one valve. 217 F.3d at 1371, 55 USPQ2d at 1318.

In *In re Fine*, the claims were directed to a system for detecting and measuring minute quantities on nitrogen compounds comprising a gas chromatograph, a converter which converts nitrogen compounds into nitric oxide by combustion, and a nitric oxide detector. The primary reference disclosed a system for monitoring sulfur compounds comprising a chromatograph, combustion means, and a detector, and the secondary reference taught nitric oxide detectors. The examiner and Board asserted that it would have been within the skill of the art to substitute one type of detector for another in the system of the primary reference, however the court found there was no support or explanation of this conclusion and reversed.

In this case, there was no support or explanation of this conclusion and the rejection should be withdrawn. The combination of references proposed in the Final Office Action would render the construction of the references impracticable for their intended purposes. If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or

motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). In this case, there is no motivation to combine.

Moreover, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) (Claims were directed to an apparatus for producing an aerated cementitious composition by drawing air into the cementitious composition by driving the output pump at a capacity greater than the feed rate. The prior art reference taught that the feed means can be run at a variable speed, however the court found that this does not require that the output pump be run at the claimed speed so that air is drawn into the mixing chamber and is entrained in the ingredients during operation. Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so." 916 F.2d at 682, 16 USPQ2d at 1432.). See also *In re Fritch*, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992) (flexible landscape edging device which is conformable to a ground surface of varying slope not suggested by combination of prior art references).

There was no reasonable expectation of success when combining the references. Evidence showing there was no reasonable expectation of success may support a conclusion of nonobviousness. *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976) (Claims directed to a method for the commercial scale production of polyesters in the presence of a solvent at superatmospheric pressure were rejected as obvious over a reference which taught the claimed method at atmospheric pressure in view of a reference which taught the claimed process except for the presence of a solvent. The court reversed,

finding there was no reasonable expectation that a process combining the prior art steps could be successfully scaled up in view of unchallenged evidence showing that the prior art processes individually could not be commercially scaled up successfully.). *See also Amgen, Inc. v. Chugai Pharmaceutical Co.*, 927 F.2d 1200, 1207-08, 18 USPQ2d 1016, 1022-23 (Fed. Cir.), cert. denied, 502 U.S. 856 (1991) (In the context of a biotechnology case, testimony supported the conclusion that the references did not show that there was a reasonable expectation of success.); *In re O'Farrell*, 853 F.2d 894, 903, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988) (The court held the claimed method would have been obvious over the prior art relied upon because one reference contained a detailed enabling methodology, a suggestion to modify the prior art to produce the claimed invention, and evidence suggesting the modification would be successful.).

Applicants have provided evidence pointing away from obviousness and in accordance with MPEP Section 2143.01:

If the examiner determines there is factual support for rejecting the claimed invention under 35 U.S.C. 103, the examiner must then consider any evidence supporting the patentability of the claimed invention, such as any evidence in the specification or any other evidence submitted by the applicant. The ultimate determination of patentability is based on the entire record, by a preponderance of evidence, with due consideration to the persuasiveness of any arguments and any secondary evidence. *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). The legal standard of "a preponderance of evidence" requires the evidence to be more convincing than the evidence which is offered in opposition to it. With regard to rejections under 35 U.S.C. 103, the examiner must provide evidence which as a whole shows that the legal determination sought to be proved (i.e., the reference teachings establish a *prima facie* case of obviousness) is more probable than not.

When an applicant submits evidence, whether in the specification as originally filed or in reply to a rejection, the examiner must reconsider the patentability of the claimed invention. The decision on patentability must be made based upon consideration of all the evidence, including the evidence submitted by the examiner and the evidence submitted by the applicant. A decision to make or maintain a rejection in the face of all the evidence must show that it was based on the totality of the evidence. Facts established by rebuttal evidence must be evaluated along with the facts on which the conclusion of obviousness was reached, not against the conclusion itself. *In re Eli Lilly & Co.*, 902 F.2d 943, 14 USPQ2d 1741 (Fed. Cir. 1990).

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Finally, each reference, singly or in combination, does not teach or suggest all the claim limitations in the independent claims as well as each dependent claims. Since the teaching or suggestion to make the claimed combination and the reasonable expectation of success is not found in Craig, there is an inference that it came from Applicants' disclosure.

CONCLUSION

Applicants respectfully submit that the claimed invention is patentable over the combined references. Applicants respectfully submit that the claims overcome all §102 and 103 rejections. Withdrawal of all rejections is respectfully requested

If for any reason the Examiner believes that a telephone conference would in any way expedite prosecution of the subject application, the Examiner is invited to telephone the undersigned at (408) 528-7490.

Respectfully submitted,



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